

REMARKS

The Office Action dated June 1, 2011, and the grounds for rejection stated therein have been reviewed. Claims 1-12 are presently pending. Claims 3-5 and 10-12 were previously withdrawn pursuant to an election requirement. Claims 10-12 have been canceled. However, with the identification of allowable subject-matter in claim 1, Applicants request consideration of previously withdrawn claims 3-5 which depend from now-allowable claim 1 and thus are patentable given their dependency from an allowable base claim.

Applicants have canceled claims 8 and 9, and have amended claim 1 to address the objections and rejections set forth in the Office Action. In view of Applicants' amendments and remarks herein, Applicants request favorable reconsideration of the Office Action's grounds for rejection.

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Claim Objections

Applicants have canceled claims 8 and 9 to address the current claim objections (duplication of claim elements). It is noted that claim 8 recited "base plate" as opposed to claim 1's recitation of "base plane." Claim 1 is currently amended to recite "base plate" to more closely follow the terminology used in the corresponding written description.

Claim Rejections

Applicants traverse the rejection of claims 1, 2 and 6-9 as being indefinite for failing to particularly point out and distinctly claim the subject matter of their invention. The Office Action expresses concern over Applicants' use of the term "variably magnetizable" in claim 1. Moreover, the Office Action expresses concern over Applicants' use of the term "deformable membrane" in claim 1. Both concerns, upon which the current rejection of claim 1 is based, are addressed below.

The term “variably magnetizable” is readily discernable when viewed in the context of Applicants’ original disclosure. In particular, paragraph [0020] of Applicants’ published application states the following regarding the variable nature of the magnetic field of the identified structures:

[0020] The base plate, islands, walls and surface parts are soft magnetic, so that current through the coil changes their magnetization, and exerts a force that displaces the part of the resilient surface over the island. This part is used as actuating surface to generate a local displacement. The walls separate the cells, thus minimizing interaction between the cells, which simplifies accurate control over the displacements of the actuator array. Preferably, permanent magnets are provided on top of the islands to provide a well-defined state of the actuator cells at zero current through the coils.

The combination of soft magnetic material and proximity to coils through which current selectively passes that “changes their magnetization” establishes the noted “variably magnetizable” structures recited in claim 1.

Per the Office Action’s request on page 3, the following relationships are summarized between claim elements and corresponding structures in the written description (at paragraphs [0030-31] of Applicants’ published application) and Fig. 2 of the drawings:

- a. deformable membrane: deformable mirror 14;
- b. variably magnetizable base plate: base plate 20;
- c. variably magnetizable islands: islands 23;
- d. actuator coils: coils 24;
- e. variably magnetizable walls: walls 21; and
- f. variably magnetizable resilient surface: magnetically permeable membrane 26.

Paragraphs [0030 and 0031] of Applicants’ Published Application are reproduced herein below:

[0030] FIG. 2 shows a side view of a part of actuator structure 12 and deformable mirror 14. FIG. 3 shows a top view of part of actuator structure 12. Actuator structure 12 contains a magnetically permeable base plate 20. Base plate 20 contains recesses bounded by walls 21. In the centres of the recesses base plate contains islands 23. Coils 24 are provided in the recesses, with windings that run around islands 23. On top of the islands permanent magnets 22 are provided. A magnetically

permeable membrane 26 rests on walls 21 and extends over the recesses and the islands.

[0031] The actuator structure contains an array of recesses, each with a magnet 22, coil 24 etc. The combination of a recess, magnet 22, coil 24, island 23 and surrounding wall 21 will be called an actuator cell. Although a rectangular array has been shown, the array may have any form e.g. a hexagonal array etc. The coils of the array are connected to a control circuit (not shown) so that the currents through the coils can be controlled independently of one another. It will be realized that the simple structure of the individual cells makes it possible to realize a high density of actuators.

Applicants traverse the current grounds for rejection of claim 1 in view of the amendments and the reasons set forth above. Applicants' have provided clarifying amendments to claim 1 to recite "plate" instead of "plane." Applicants have also identified supporting disclosure of the claim elements in the drawings and associated written description. The presently pending claims are both clear and definite.

Conclusion

The application is now in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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